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Cont.

15. (New) The composition according to Claim 7, wherein the 25°C xylene soluble has a content of from 25.7 to 28%.

REMARKS

Claims 1-15 are active in the present application. Claim 1 has been amended for clarity and to limit the xylene soluble to the xylene soluble content of the ethylene-propylene block copolymer. Support for the amendment is found on page 4, lines 16-17, wherein it is stated that the xylene soluble substantially comprises the ethylene-propylene copolymer part of the composition. Claims 7-15 are new claims. Support for new Claim 9 is found in the original claims. Support for new Claims 10-15 is found in Table 1 on page 18. No new matter is believed to have been added by this amendment.

REQUEST FOR RECONSIDERATION

Applicants thank Examiner Shosho for the helpful and courteous discussion of March 7, 2003. During the discussion, Applicants' U.S. representative pointed out that the xylene soluble limitation of the present claims is not obvious in view of the prior art references relied upon by the Examiner since the prior art references do not disclose that compositions adhering to the presently claimed xylene solubles limitations can exhibit desirable physical properties.

Applicants have discovered that compositions containing an ethylene-propylene block copolymer of certain xylene soluble characteristics provide compositions in which the impact strength is good (see Table 1 below). Compositions comprising less than 22% of xylene solubles yield low impact properties (page 4, lines 18-19).

TABLE 1

	Examples					
	1	2	3	4	5	C. Ex. 2
Amount of nucleating agent (ppm)	1,200	2,000	1,200	800	1,200	2,000
MFR (g/10 min)	12.7	12.0	12.8	11.4	10.5	12.0
Stereoregularity index ordinary temp. xylene insoluble (%)	99.1	99.1	99.1	99.0	99.1	98.9
Content of ordinary temperature xylene soluble (wt.%)	22.0	25.1	22.1	25.7	22.0	25.0
Relaxation time (T1) y (msec)	146	147	140	134	146	193
Value of right side of formula (I)	149.2	149.5	140.2	136.2	149.2	175.2
Flexural modulus (MPa)	1,150	1,150	1,180	1,050	1,180	1,150
-30°C Izod impact strength (kJ/m ²)	6.5	7.2	6.6	8.0	7.1	3.2
Tensile elongation (%)	≥500	250	200	300	≥500	180

Claim 1 has been amended herein to limit the xylene soluble content to that of the ethylene-propylene block copolymer. New Claims 7-15 have been added. New independent Claim 7 requires that the xylene soluble content is based upon the weight of the composition. Dependent Claims 10-15 limit the xylene soluble to 25.1-28% or 25.7-28% for each of independent Claims 1, 4 and 7.

Applicants traverse the Office's assertion that EP 699711 discloses the xylene insoluble and xylene soluble amounts presently-claimed (see lines 1 and 2 on page 5 of the Office Action). Amended independent Claim 1 limits the amount of xylene soluble to that of the xylene soluble of the propylene-ethylene block copolymer. The xylene soluble in present

Claims 4 and 7 is limited to from 22 to 28% by weight based upon the weight of the composition.

As stated in the Office Action September 9, 2002, “the xylene insoluble is the propylene homopolymer portion and the xylene soluble is the ethylene-propylene copolymer portion” (page 4, last line through page 5, first line, of the Office Action; referencing the Kamakura patent). The preparation of propylene-ethylene copolymer is disclosed in EP 699711 on page 9, lines 14-21. None of the copolymers (BPP1-BPP3) is disclosed to contain an amount of xylene soluble within the presently-claimed range (per amended Claim 1). For example, BPP1 is disclosed to contain 14.5% by weight of the rubber component (propylene-ethylene copolymer). If one assumes that this material is soluble in xylene, as asserted by the Office, the total xylene solubles are (14.5% + 0.5% = 15%). The 0.5% is the amount of material that is dissolved when determining the xylene insoluble of the polypropylene homopolymer PP1 (e.g., (100% - 99.5% = 0.5%); see column 2 of Table 2 on page 9). Similarly, BPP3 has a rubber component content of 28.6% and therefore a total xylene soluble of 29.4% (28.6% + 0.8% = 29.4%). This information is tabulated below for convenience. None of the prior art ethylene-propylene block copolymers BPP1, BPP2 or BPP3 has between 22 and 28% xylene solubles as required by amended Claim 1.

Prior Art block copolymer	poly-propylene (PP) type	xylene insoluble of PP homopolymer	xylene soluble of PP homopolymer	rubber component (%)	total xylene solubles (%)
BPP1	PP1	99.5	0.5	14.5	15.0
BPP2	PP2	99.5	0.5	19.3	19.8
BPP3	PP3	99.2	0.8	28.6	29.4
	PP4	99.7	0.3		0.3

Although EP 699711 discloses that the propylene-ethylene copolymer rubber content of the propylene-ethylene block copolymer may be 5-25% by weight, the patent teaches that lower amounts of propylene-ethylene copolymer rubber are preferred (page 4, lines 12-14). New dependent Claims 10-11 further limit the amount of xylene soluble to 25.1-28% and 25.7-28%, respectively.

Claim 1 is not obvious in view of the prior art cited by the Examiner since the prior art references do not disclose or suggest that compositions containing an ethylene-propylene block copolymer having a xylene soluble content of from 22 to 28% can provide compositions exhibiting the physical properties as demonstrated by Examples 1-5 on page 18. New dependent Claims 10-11 cannot be obvious in view of the prior art cited by the Examiner since none of the prior art references disclose or suggest compositions containing an ethylene-propylene block copolymer having 25.1-28% or 25.7-28% xylene solubles.

With regard to present Claims 4 and 7, EP 699711 further discloses that an ethylene-propylene rubber may be present in the prior art composition (page 1, line 46). The propylene content of this ethylene-propylene rubber may be from 15 to 35% by weight, no indication of the rubber portion (ethylene-propylene) is disclosed.

Although it may be possible that the compositions of EP 699711 encompass a composition having a xylene soluble fraction of from 22 to 28% by weight based upon the weight of the composition, no such composition appears to be disclosed in the inventive Examples. Moreover, the compositions exemplified as Comparative Examples which have between 22 and 28% xylene soluble content are shown to be inferior in their performance characteristics.

As can be seen in Table 3 of the patent, all of the prior art inventive examples (Examples 1-7) contain polypropylene in amounts of at least 30%. The total amount of polypropylene and talc is at least 45% by weight (Example 4). With nearly half of the weight of the compositions of Examples 1-7 consisting of polypropylene and talc which do not contribute significantly to xylene solubles (as evidenced by Table 2 of EP 699711), the amount of xylene solubles derived from the propylene-ethylene block copolymer and ethylene-propylene rubber (EPR) will not fall within the presently-claimed range of xylene solubles. For example, in Example 3 the polypropylene proportion is 30% by weight. The polypropylene component PP3 contributes 0.24% by weight ($0.8\% \times 30\% = 0.24\%$) to the xylene solubles. The propylene-ethylene block copolymer BPP3 is present in a proportion of 27% by weight based on the weight of the composition. The rubber component content of BPP3 is 28.6% therefore the propylene-ethylene block copolymer BPP3 of Example 3 contributes approximately 8% by weight of xylene solubles to the total composition. If one assumes that the ethylene-propylene rubber (EPR1) contributes all of its components other than polypropylene which may be as much as 85% by weight, to the xylene solubles the EPR1 contribution is approximately 9% by weight. Thus the total amount of xylene solubles contributed by the polypropylene, the propylene-ethylene block copolymer and the ethylene-propylene copolymer is only about 18% by weight. Therefore, none of the inventive Examples of EP 699711 fall within the presently-claimed range of xylene solubles. Any Comparative Examples that may fall within the presently claimed xylene soluble limit are demonstrated to provide poorer flexural performance in Table 4 of the patent. The prior art compositional data is summarized below for convenience.

	Polypropylene (PP)		Propylene-ethylene block copolymer (BBP)		Ethylene-propylene rubber (EPR)		Ethylene-olefin copolymer		Talc		Amount of xylene soluble from PP (%)		Amt. xylene soluble contributed by BPP (%)	Max. Amt. xylene contributed from EPR (%)	xylene soluble from PP, BBP and EPR (%)
	Type	Proportion (%) by wt)	Type	Proportion (%) by wt)	Type	Proportion (%) by wt)	Type	Proportion (%) by wt)	Type	Proportion (%) by wt)	Total of Talc and PP (%)	Amount of xylene soluble from PP (%)			
Example 1	PP1	35	BPP1	28	EPR1	10	PEC1	10	1	17	52	0.18	4.2	8.5	13
Example 2	PP2	31	BPP2	31	EPR2	11	PEC3	13	1	14	45	0.18	6	9.4	15.6
Example 3	PP3	30	BPP3	27	EPR1	11	PEC1	10	1	22	52	0.24	7.7	9.4	17.3
Example 4	PP4	35	BPP2	30	EPR3	10	PEC2	11	1	14	49	0.1	5.8	8.5	14.4
Example 5	PP2	38	BPP2	36	EPR2	9	PEC2	8	2	9	47	0.2	6.9	7.7	14.8
Example 6	PP1 PP3	17 14	BPP1	31	EPR1	7	PEC1	9	1	22	53	0.2	4.7	6	10.9
Example 7	PP2 PP4	20 18	BPP1	28	EPR1	8	PEC2	8	1	18	56	0.15	4.2	6.8	11.2
Comparative Example 1	PP5	37	BPP3	34	EPR2	13	PEC3	12	2	4	41	0.52	9.7	11.1	21.3
Comparative Example 2	PP6	20	BPP1	50	EPR2	9	PEC1	8	1	13	33	0.3	7.5	7.7	15.5

Comparative Example 3	PP8	30	BPP2	25	EPR3	17	PEC2	18	2	10	40	0.63	4.9	14.5	20.0
Comparative Example 4	PP9	25	BPP3	22	EPR1	18	PEC3	18	1	17	42	0.73	6.3	15.3	22.3
Comparative Example 5	PP1	20	BPP1	40	EPR3	15	PEC2	15	1	10	30	0.1	6	12.8	18.9
Comparative Example 6	PP2	52	BPP2	27	EPR3	4	PEC2	3	1	13	65	0.26	5.3	3.4	9.0
Comparative Example 7	PP7 PP9	20 20	BPP3	17	EPR1	6	PEC1	6	1	31	71	0.8	4.9	5.1	10.8

Applicants traverse the Office's statement on page 5, lines 3-7, of the Office Action that the compositions disclosed in EP 699711 are identical to those presently claimed. As was discussed above, the inventive compositions and ethylene-propylene copolymers of EP 699711 do not contain a xylene soluble fraction meeting the present limitations of Claims 4 and 7. There is no evidence of record that the compositions of the prior art would intrinsically possess the physical properties of the presently claimed compositions.

As was discussed earlier for the EP 699711 patent, the Sumitomo patent discloses that compositions having xylene soluble contents within the presently-claimed range provide poor performance. For example, Comparative Examples 11 and 12 in Table 3 of the patent are shown to provide a poor balance of flexural modulus and Izod impact strength. The same is true for Comparative Examples 17, 19 and 20 in Table 4. The Sumitomo therefore teaches that compositions containing ethylene-propylene block copolymers providing a xylene soluble concentration of from 22 to 28% provide inferior performance.

The Comparative Examples of the Sumitomo reference may have a room temperature xylene soluble concentration that falls within the presently-claimed range of Claims 4 and 7 (see for example Comparative Examples 1 and 2 in Table 1 which have a xylene soluble of 23.8 and 26.6% by weight respectively). However, Sumitomo describes the balance of rigidity and impact resistance of the Comparative Examples as "not good" (column 22, line 39) or "inferior" (column 22, line 54). By teaching that compositions having xylene soluble fractions falling within the presently-claimed range are "inferior" or "not good", Sumitomo teaches away from the presently-claimed invention. The combination of the Sumitomo reference with any of the other prior art references cited by the Examiner makes no sense since Sumitomo regards compositions having a xylene soluble within the presently claimed range as inferior.

Claims 4 and 7 which limit the amount of xylene soluble based on the weight of the composition cannot be obvious in view of the prior art references (EP 699711 and Sumitomo) relied upon by the Examiner in view of the fact that the prior art references teach that compositions containing the presently claimed amounts of xylene solubles provide inferior performance.

Applicants submit the disclosure of the Watanabe patent cannot render the presently-claimed invention obvious regardless of its combination with the other prior art references cited, since none of the references disclose a composition having a xylene soluble concentration within the presently-claimed ranges.

Applicants submit that when viewed as a whole, the teachings of the prior references relied-upon by the Examiner would not lead those of ordinary skill in the art to the presently-claimed invention as evidenced by their Comparative Examples which demonstrate that compositions having a xylene soluble content as presently claimed are inferior.

Claims 4-6 contain the transitional phrase “consisting essentially of.” Support for this transitional phrase is found on page 6, line 27, wherein it is stated “the composition of the present invention is suitably applied to the automobile exterior parts without adding other rubber components or the like.” The Office objected to Claims 4-6 on the basis that no support was found for this transitional phrase in the specification as originally filed. As noted above however, the specification as filed contains a description that the compositions are suitable for their intended purpose without the addition of other components. Applicants submit that this disclosure is sufficient support for the transitional phrase “consisting essentially of” in Claims 4-6.

The Office further objected to Claims 4-6 on the basis that the claimed compositions may contain other components such as neutralizing agents, antioxidants etc. which the Office

asserts would affect the basic and novel characteristics of the claimed composition.

Applicants note, however, that the basic and novel characteristics of the claimed composition include those characteristics which appear in the present claims. These characteristics include melt-flow rate, xylene insoluble, xylene soluble, flexural modulus etc. Applicants submit that the inclusion of components such as the neutralizing agents, antioxidants, etc. mentioned above would not necessarily materially affect these novel and basic characteristics of the claimed invention when present in amounts commonly employed in the art.¹

Applicants therefore submit that the specification as originally filed contains a sufficient description of the transitional phrase "consisting essentially of." The inclusion of this phrase in Claims 4-6 excludes those materials which may materially affect the basic and novel characteristics of the claimed composition (and for example impact strength) but still allow the presence of materials that do not materially affect the basic and novel characteristics of the claimed invention.

¹As stated in In re Janakirama-Rao 137 USPQ 893 (CCPA 1963)"[T]he word 'essentially' opens the claims to the inclusion of ingredients which would *not* materially affect the *basic* and *novel* characteristics..." (emphasis in the original; see also MPEP § 2111.03-Transitional Phrases).

Applicants submit the amendment to the Claims places all claims in condition for allowance. Applicants respectfully request the withdrawal of the current rejections and the passage of all now pending claims to Issue.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Norman F. Oblon
Attorney of Record
Registration No. 24,618

Stefan U. Koschmieder, Ph.D.
Registration No. 50,238



22850

(703) 413-3000
Fax #: (703) 413-2220
NFO/kst

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AMENDMENT AND REQUEST FOR RECONSIDERATION

IN THE CLAIMS

--1. (Amended) A propylene-ethylene block copolymer composition for automobile exterior parts, comprising a propylene-ethylene block copolymer having a melt flow rate (MFR) of 12 to 16 g/10 min and a nucleating agent comprising methylenebis(2,4-di-*t*-butylphenol) acid sodium phosphate, said nucleating agent blended with the propylene-ethylene block copolymer in an amount of 300 to 2,000 ppm when the propylene-ethylene block copolymer is granulated, and said composition having:

(a) a melt flow rate (MFR) of 10 to 18 g/10 min when measured at 230°C under a load of 2.16 kg (21.2N);

(b) a 25°C xylene insoluble having a stereoregularity index [mmmm] fraction of 98.9% or higher when measured by C¹³-NMR; and

(c) a 25°C xylene soluble [characterized by] wherein the xylene soluble:

(c-1) [having a content] is present in an amount of 22 to 28% by weight based on the propylene-ethylene block copolymer [on the composition];

(c-2) comprises [comprising] only a single component with respect to a relaxation time T₁ measured by pulse NMR; and

(c-3) satisfies [satisfying] the following formula (I):

$$y \leq 0.0014x^3 - 0.0897x^2 - 1.0593x + 231.6 \quad (I)$$

wherein x is an ethylene content (% by weight) measured by ^{13}C -NMR and y is the relaxation time T1 (msec) measured by pulse NMR.

Claims 7-15 (New).